TITLE: METHOD FOR MONITORING END OF LIFE FOR BATTERY
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DOCKET NO.: 279.376US2

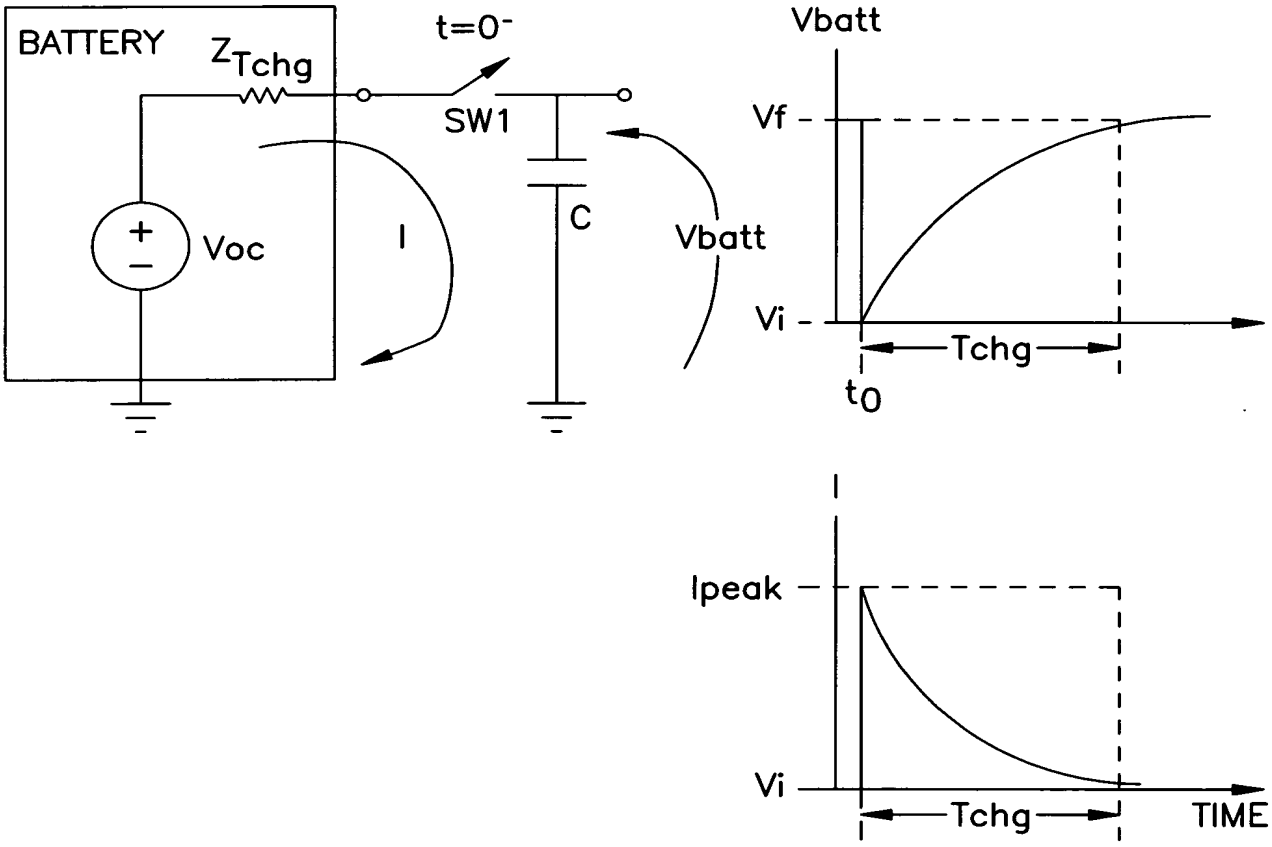

FIG. 1

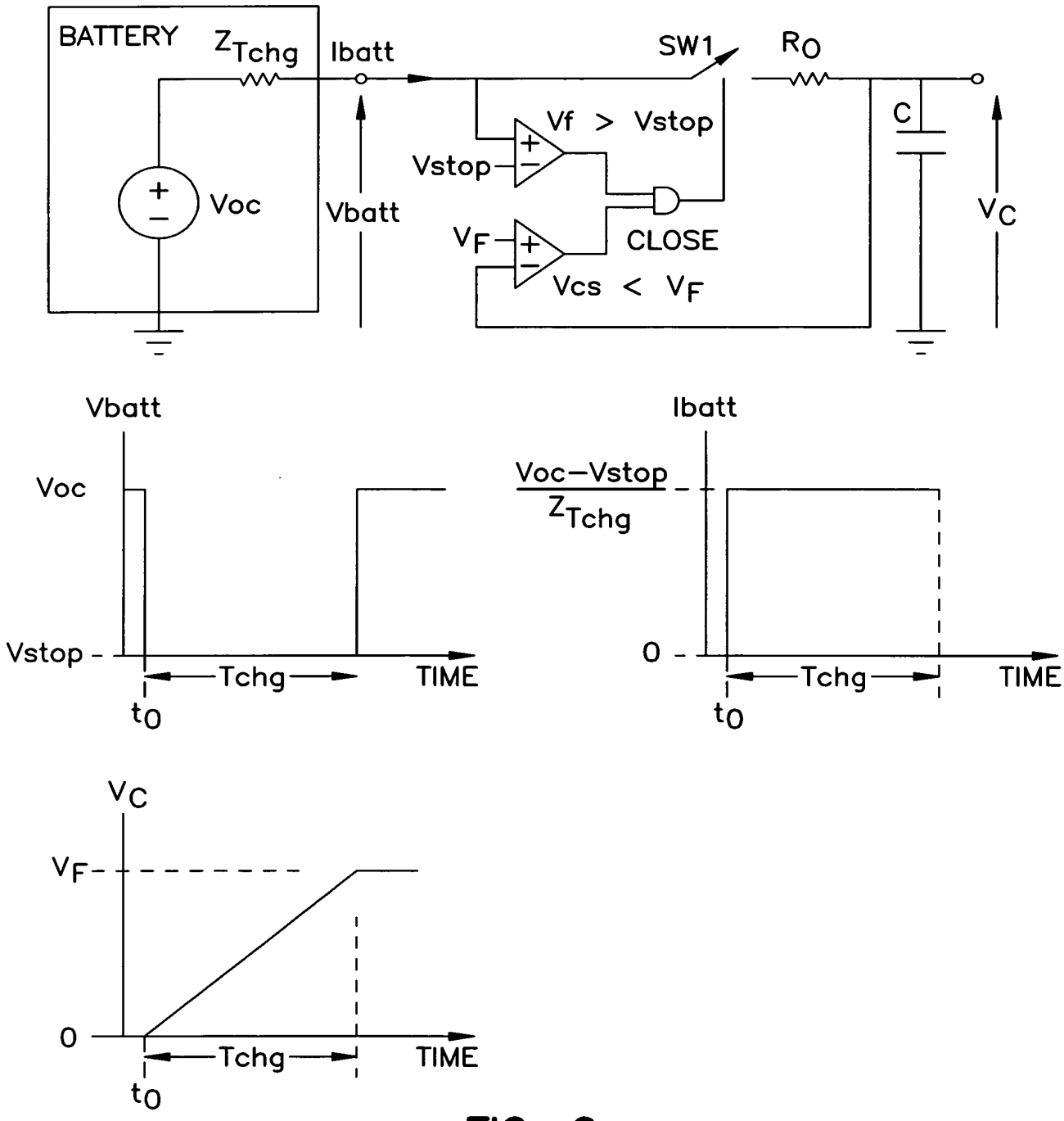
BATTERY
Z_{Tchg}
Ibatt
SW1
R_O
Vf > Vstop
Vstop
Voc
Vbatt
V_F
CLOSE
Vcs < V_F
C
V_C
Vbatt
Voc
Vstop
Tchg
TIME
t_0
Ibatt
$\frac{Voc-Vstop}{Z_{Tchg}}$
0
Tchg
TIME
t_0
V_C
V_F
0
Tchg
TIME
t_0

FIG. 2

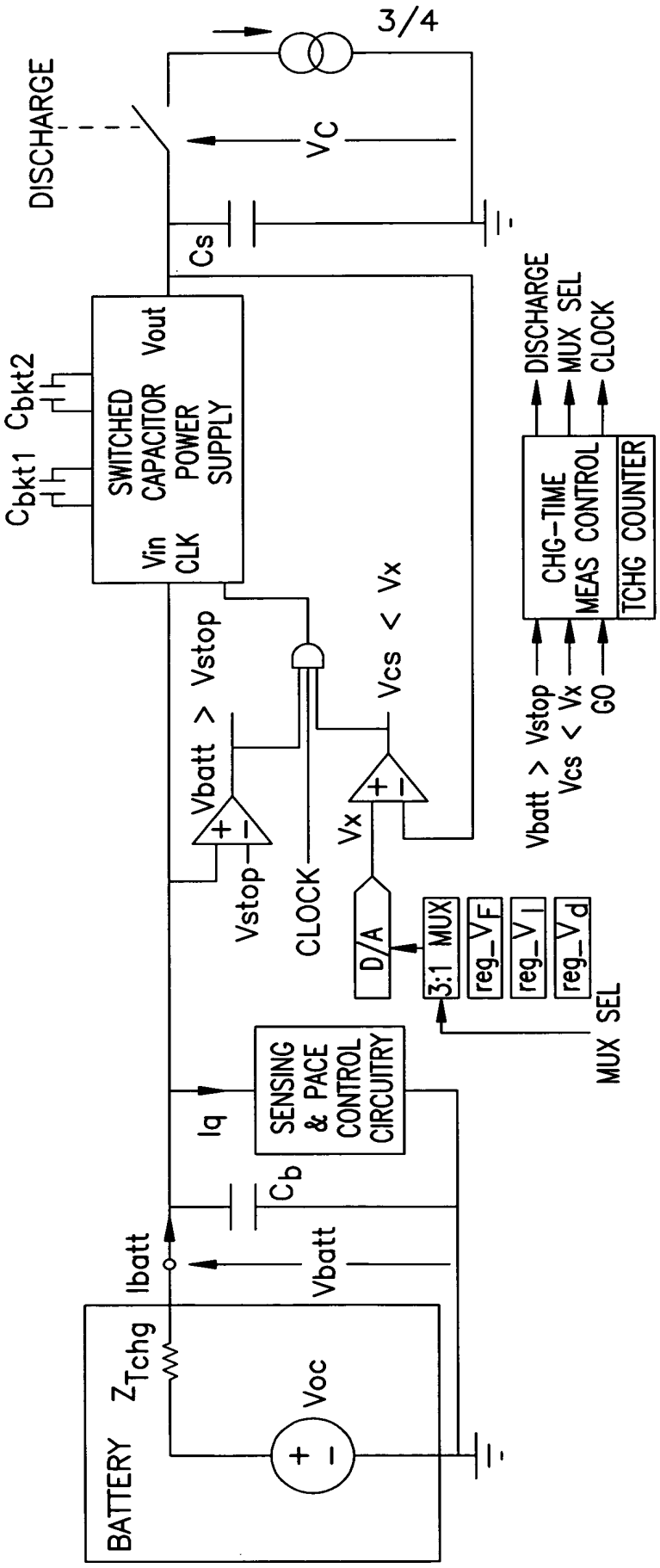
DISCHARGE
Vc
Cs
Cbkt1
Cbkt2
SWITCHED CAPACITOR POWER SUPPLY
Vout
Vin
CLK
DISCHARGE
MUX SEL
CLOCK
CHG-TIME MEAS CONTROL
TCHG COUNTER
Vbatt > Vstop
Vcs < Vx
GO
Vbatt > Vstop
Vcs < Vx
Vstop
CLOCK
Vx
D/A
3:1 MUX
reg_VF
reg_VI
reg_Vd
MUX SEL
SENSING & PACE CONTROL CIRCUITRY
Iq
Cb
Ibatt
Vbatt
BATTERY
ZTchg
Voc

FIG. 3A

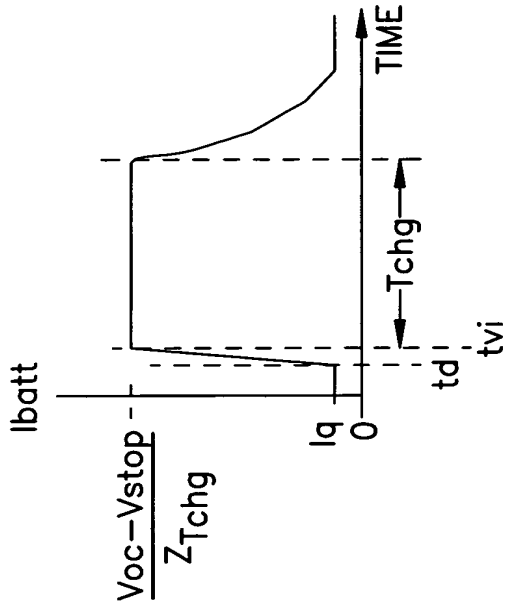
Ibatt
Voc−Vstop / ZTchg
Iq
0
td
tvi
Tchg
TIME

FIG. 3C

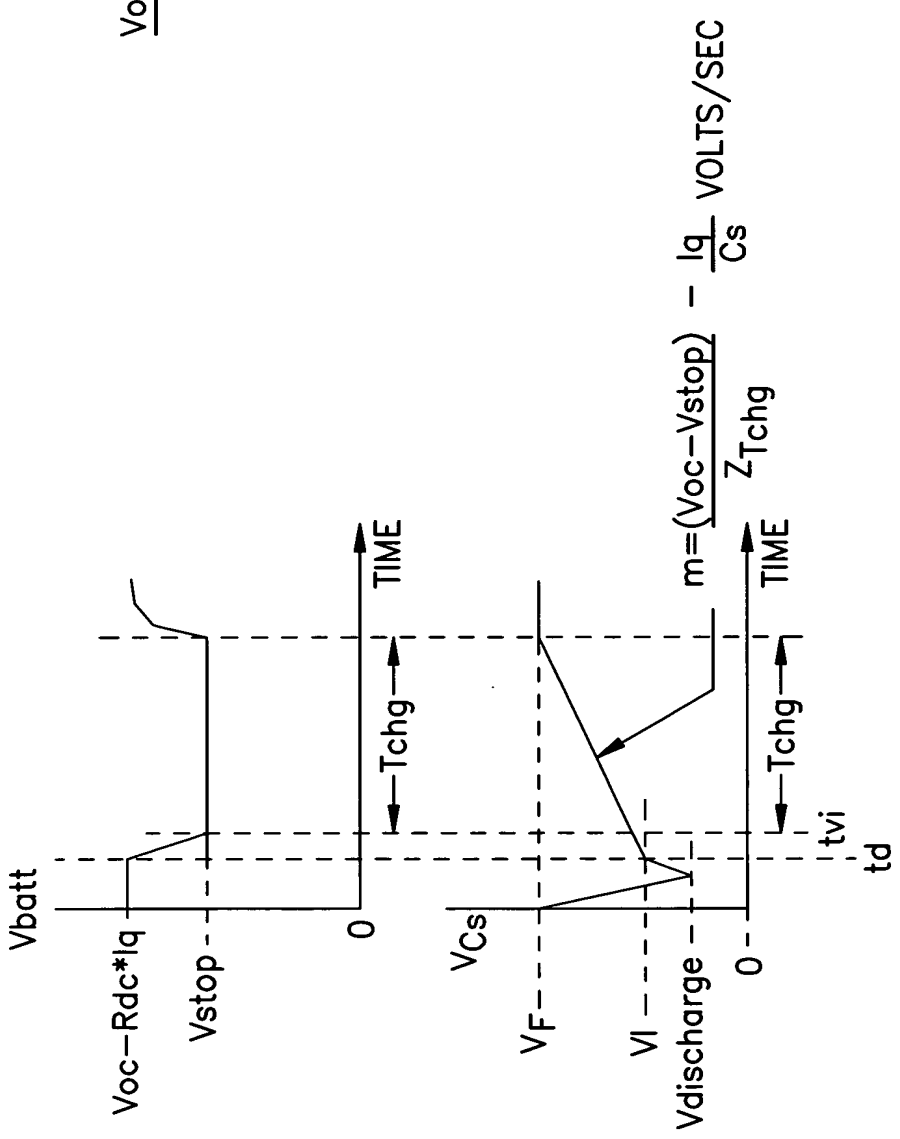
Vbatt
Voc−Rdc*Iq
Vstop
0
TIME
Tchg
VCs
VF
VI
Vdischarge
0
m=(Voc−Vstop) / ZTchg − Iq / Cs VOLTS/SEC
TIME
Tchg
tvi
td

FIG. 3B